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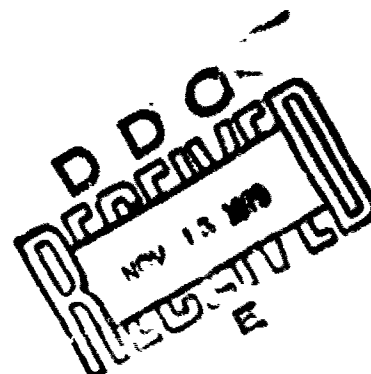
Research Memorandum 76-4

(5)

**PRELIMINARY REEVALUATION OF ROTC RANGER  
CAMP STANDARD SCORE CONVERSIONS**

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E Sue Mohr



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April 1976

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(6) PRELIMINARY REEVALUATION OF ROTC BANNER  
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## PRELIMINARY REEVALUATION OF ROTC RANGER CAMP STANDARD SCORE CONVERSIONS

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### BACKGROUND

In 1971, the Reserve Officers' Training Corps of the Army Training and Doctrine Command (ROTC-TRADOC) instituted a policy of upward conversion of standard scores received by Ranger Camp cadets in relation to scores received by Advanced Camp cadets. For example, if the Army Standard Score mean is 100 with a standard deviation of 20, an Advanced Camp average performance score would be 100 while an average-performance at Ranger Camp would be 120. This effect on scores is important because it affects the awarding of Regular Army (RA) commissions to cadets. RA commissions are determined, in part, on the basis of the Leadership Potential Index (LPI), which is composed of various ratings and performance scores received during the camp cycle. It is obvious that if Ranger scores are converted upward, cadets attending Ranger Camp have a higher probability of being awarded an RA commission.

This policy decision has a logical basis. The program of instruction (POI) at Ranger Camp is physically more demanding than that at Advanced Camp. The conversion upward was justified by the increased rigor of Ranger Camp and the implicit assumption that a primary requirement of the Regular Army is for good combat officers. This decision was further supported by recommendations based on unpublished research by the Army Research Institute for the Behavioral and Social Sciences (ARI). In that research, each professor of military science (PMS) had been instructed to rate cadets along five criteria. These ratings were then sorted by whether the cadet attended Ranger Camp or Advanced Camp, and scored. Total ratings of Ranger Camp cadets were found to be approximately one standard deviation above the mean rating score received by Advanced Camp cadets. The 1971 conversion tables were based upon these results.

In 1975, ROTC-TRADOC requested that ARI check the validity of continued use of this conversion table for Ranger Camp cadets. Because the Army environment has changed considerably in the years since the original work was completed (e.g., the all-volunteer Army, the end of the war in Vietnam, women in ROTC), the conversion tables may no longer accurately reflect the real differences between Ranger and Advanced Camp cadets.

### METHOD

Rating forms were sent from TRADOC to each ROTC PMS with instructions to rate cadets planning to attend Ranger Camp during the summer of 1975. Figure 1 shows the rating form, which presented five criteria upon which the PMS was asked to evaluate each Ranger Camp cadet, using a 7-point scale of 1 (low) to 7 (high). This scale was identical to that used in 1971. After completing the ratings, the PMS forwarded them to ARI for analysis. Three hundred and twenty-six rating forms were usable.

# ON-CAMPUS RATING SHEET

DATE \_\_\_\_\_

Name of Cadet \_\_\_\_\_ SSAN \_\_\_\_\_

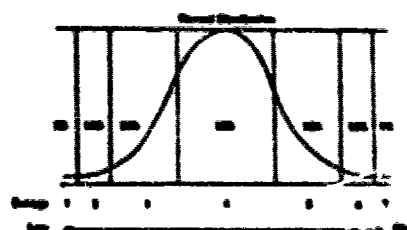
Name of Institution \_\_\_\_\_

Name and Title of Rater \_\_\_\_\_

## INSTRUCTIONS

Experience indicates that the ROTC cadets who attend the Ranger Camp are a select group who have significantly better leadership potential than the average Advanced Camp cadet. To reflect this in the leadership potential score that the cadets will earn at the Ranger Camp, it is necessary to obtain an estimate of their leadership potential from their respective professors of military science.

Using the distribution curve shown below, which represents the normal distribution of qualities of cadets, circle the number to the right of items a-e below that best represents the cadet's standing with the other cadets who are eligible for attendance at the Advanced Camp.



## ITEMS

## RATING SCALE

- |   |               |
|---|---------------|
| a. Participation in ROTC extra curricular activities.                   | 1 2 3 4 5 6 7 |
| b. Knowledge and ability to apply military subject matter.              | 1 2 3 4 5 6 7 |
| c. Performance in ROTC class work.                                      | 1 2 3 4 5 6 7 |
| d. Performance in other class work.                                     | 1 2 3 4 5 6 7 |
| e. Ability to lead others as demonstrated in ROTC leadership positions. | 1 2 3 4 5 6 7 |
| f. Total of ratings (a-e): _____  |               |

NOTE. Record Cadet Evaluation Battery (CEB) scores on reverse side for cadet named above.

Figure 1. PMS on-campus rating sheet completed for each Ranger cadet volunteering for 1973 camp

Cadet Evaluation Battery (CEB) scores for the same cadets were also collected. The CEB is composed of subtests measuring combat leadership potential (cognitive and non-cognitive), technical-managerial leadership potential (cognitive and non-cognitive), career potential (cognitive and non-cognitive) and career intent. Each subscale of the CEB has an Army Standard Score mean of 100 and a standard deviation of 20.

## RESULTS

*are presented*  
Table 1 presents the means and standard deviations of the five ratings and the total ratings of 1975 Ranger Camp cadets and the means and standard deviations of the total ratings of the 1971 Ranger and Advanced Camp cadets. In the last row, total PMS ratings have been converted to Army Standard Scores. Advanced Camp (1971) mean and standard deviation were used as the baseline in converting the scores obtained from the 1971 and 1975 Ranger Camp cadet ratings. The mean total rating score of the 1975 Ranger cadets is almost equal to the total score of the 1971 Ranger cadets, with 1975 cadets being rated slightly lower. However, the standard deviation of the two Ranger groups increased on the 1975 sample.

*is presented for*  
Table 2 presents the means and standard deviations of the seven CEB subtests. Ranger cadets scored highest on the Combat Leadership Non-cognitive (CLN) scale, which measures orientation and interests related to combat and outdoor and physical activities, and on the Career Intent (CI) scale. Scores from the Combat Leadership Cognitive (CLC) scale were about one-half of a standard deviation above the population mean. The only scale on which the Ranger cadets scored close to the population mean was on the Technical Managerial Cognitive (TMC) scale, which measures general cognitive factors related to Technical-Managerial Leadership performance.

Table 3 presents a complete intercorrelation matrix of the PMS ratings and the CEB scores. Individual PMS ratings correlate substantially; CEB subtests also correlate to the degree expected, based on previous unpublished ARI research. Of interest is the rectangle of coefficients intercorrelating the PMS ratings and the CEB scale scores. The CLC scale is the only test which correlates significantly with PMS ratings, albeit at a very modest level. It does so for three out of five individual PMS items--participation in ROTC extracurricular activities, knowledge and ability to apply military science subject matter, and ability to lead others as demonstrated in ROTC leadership positions.

## DISCUSSION

The standard score conversions of PMS ratings of cadets who had volunteered to attend Ranger Camp in 1975 were slightly lower than ratings made by PMS in 1971 of cadets who subsequently attended Ranger camp.

Table 1  
MEANS AND STANDARD DEVIATIONS OF 1975 RANGER CAMP CADETS AND  
1971 RANGER AND ADVANCED CAMP CADETS

Items	1975 Ranger Camp Cadets (n = 524)		1971 Ranger Camp Cadets (n = 579)		1971 Advanced Camp Cadets (n = 502)	
	$\bar{X}$	$\sigma$	$\bar{X}$	$\sigma$	$\bar{X}$	$\sigma$
a. Participation in ROTC extra-curricular activities.	6.24	1.12				
b. Knowledge and ability to apply military subject matter.	6.20	.95				
c. Performance in ROTC class work.	6.05	1.05				
d. Performance in other class work.	5.36	1.16				
e. Ability to lead other as demonstrated in ROTC leadership positions.	6.21	.99				
Total of ratings (a-e)	30.02	4.30	30.3	3.7	26.6	5.6
Standard score conversion using 1971 Advanced Camp score as baseline	112.2		113.2		100	20

Table 2

CADET EVALUATION BATTERY MEANS AND STANDARD DEVIATIONS  
FOR RANGER CADETS, 1975  
(n = 244)

CEB Subtests	$\bar{X}$	$\sigma$
Combat Leadership Cognitive (CLC)	110.03	18.27
Combat Leadership Non-Cognitive (CLN)	115.40	16.85
Technical-Managerial Cognitive (TMC)	100.39	16.51
Technical-Managerial Non-Cognitive (TMN)	107.96	16.49
Career Potential Cognitive (CPC)	106.16	15.41
Career Potential Non-Cognitive (CPN)	109.62	15.77
Career Intent (CI)	117.48	13.39



Table 3

## COMPLETE INTERCORRELATION MATRIX OF PMS RATINGS AND CEB SUBSCALES

	PMS Items (n = 326)					CEB Subscales (n = 244)						
	2	3	4	5	6	7	8	9	10	11	12	
1. Extracurricular activities	.66*	.55*	.34*	.64*	.13*	.01	.00	.07	.02	.02	.15*	
2. Ability to apply military science		.74*	.52*	.77*	.15*	.08	.06	.10	.02	.05	.10	
3. Performance in ROTC class work			.61*	.60*	.05	.02	.04	.05	-.02	-.02	.06	
4. Performance in other class work				.42*	.11	-.05	.03	.04	.06	-.08	-.09	
5. Leadership					.15*	.02	-.04	.07	-.05	.04	.10	
6. CLC						.20*	.44*	.24*	.61*	.22*	.19*	
7. CLN							.06	.50*	.18*	.31*	.44*	
8. TMC								.27*	.52*	.19*	.20*	
9. TMN									.30*	.11	.33*	
10. CPC										.21*	.18*	
11. CPW											.25*	
12. CI												

\*  $p < .05$

Both sets of Ranger ratings were higher than a 1971 control group of Advanced Camp cadets. Many problems plagued this investigation, not the least of which was a lack of a proper control group. Due to the incomplete design of the current study, the only option available is to use the 1971 Advanced Camp cadets as the control group. If it is acceptable to use this group as the control, then justification for the continued use of conversion tables is demonstrated.

However, the issue is whether the students entering ROTC in 1975 were qualitatively different from those entering in 1971. The assumption that there were no differences between 1971 and 1975 cadets is questionable, because of differences in the new military environment likely to influence decisions on whether or not to join ROTC (e.g., no draft, no war in Vietnam, more women). Thus, the motivating factors influencing entry into ROTC may be different.

One assumption that may be made is that the PMS employed a relative rating criterion rather than an absolute one in rating cadets. That is, the PMS in 1975 viewed the Ranger cadet relative to the 1975 Advanced Camp cadet in the same light as the PMS in 1971 viewed the Ranger cadet relative to the Advanced Camp cadet in that year. Yet it is the degree of difference between Ranger Camp and Advanced Camp cadets that is being investigated in order to justify continued use of the upward conversion scores for Ranger cadets. Other factors are also worthy of mention. For example, 1975 cadets were singled out for special evaluation after they had volunteered to attend Ranger Camp. In 1971, ratings were made before cadets had volunteered for Ranger Camp. Also, the 1975 cover letter and the rating sheet contained potentially biasing information. They read: "Experience indicates that ROTC cadets who attend the Ranger Camp are a selected group who have significantly better leadership potential than the average Advanced Camp cadet...." Including these statements could well have inflated the ratings for Ranger cadets.

If the 1975 ROTC cadets are a more highly self-selected group of students than the 1971 cadets, which in the draft-free environment of 1975 is a plausible assumption, then cadets electing to go to Advanced Camp in 1975 should have a smaller true variance than the 1971 cadets. Ranger cadets, on the other hand, should have a larger true variance than the 1971 group, since they may also now be volunteering for significantly different reasons than the Ranger volunteers of 1971. If this were the case, and some data indicate that it may be (the Ranger unconverted variance is larger in 1975 than in 1971), then conversion tables if needed at all probably should not reflect a difference of a whole standard deviation.

However, no definitive conclusions can be reached without further data. Therefore, it is recommended that the use of the present conversion tables be continued, with the proviso that further research be planned and carried

out by ARI with ROTC-TRADOC support. This research would include a complete design with proper control groups and proper follow-up. Moreover, this research would provide an opportunity to validate the PMS ratings, CEB subtests, and Ranger Camp conversion tables against actual performance criteria. Without such further research, the use of conversion tables remains questionable.

APPENDIX

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Military Letter

Subject: ROTC Ranger Camp Cadet's Leadership Potential Index (LPI)



DEPARTMENT OF THE ARMY  
HEADQUARTERS UNITED STATES ARMY TRAINING AND DOCTRINE COMMAND  
FORT MONROE, VIRGINIA 23601

5-1 Jul 75

ATRO-ED

30 May 75

SUBJECT: ROTC Ranger Camp Cadet's Leadership Potential Index (LPI)

Commander, US Army First ROTC Region, Fort Bragg, NC 28307  
Commander, US Army Second ROTC Region, Fort Knox, KY 40121  
Commander, US Army Third ROTC Region, Fort Riley, KS 66442  
Commander, US Army Fourth ROTC Region, Fort Lewis, WA 98433


1. Reference is made to TRADOC Reg 145-1, ROTC Basic and Advanced Camp Program.
2. Experience indicates that ROTC cadets who attend the Ranger Camp are a select group who have significantly better leadership potential than the average Advanced Camp cadet. Accordingly, the ROTC Ranger Camp commander is required to adjust the Ranger Camp cadet LPI scores by using the conversion table at figure N-17 of above reference. That table will have been used for four consecutive years after the 1975 ROTC Ranger Camp. It is now considered appropriate to collect necessary information as a basis for updating the table for 1976. To that end, each PMS will evaluate those cadets selected to attend the 1975 Ranger Camp using the oncampus rating sheet at inclosure. Local reproduction on 8- by 10 1/2-inch paper is authorized. (Exempt report paragraph 7-2h, AR 335-15.) Completed rating sheets will be forwarded direct to the US Army Research Institute for the Behavioral and Social Sciences (ARI) NLT 1 Jul 75 using the following address:

Commander  
US Army Research Institute for the Behavioral and Social Sciences  
The Commonwealth Building, Room 332D  
1300 Wilson Boulevard  
Arlington, Virginia 22209

3. ARI will analyze the completed oncampus rating sheets and will provide this headquarters NLT 1 Nov 75 a recommended revision of mentioned conversion table for adjusting the LPI of cadets who attend the 1976 ROTC Ranger Camp.

4. Point of contact at this headquarters is Mr. John I. Weldon, Jr.,  
AUTOVON 680-3666 or 680-3474.

FOR THE COMMANDER:

  
W. L. HENDERSON  
LTC, AGC  
Asst AG

1 Incl  
as

Copies furnished:  
Cdr  
NSA Research Institute for  
Behavioral & Social Sciences  
PMS, Sr ROTC Unit